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Rice

OUTLOOK & SITUATION

Table 1.--Rice (rough equivalent): supply, disappearance, area, and prices 1/

Item	1979/80	1980/81	1981/82 (prel.)	1982/83 (proj.)
<u>Million cwt</u>				
<u>Supply</u>				
Beginning stocks, August 1	31.6	25.7	16.5	49.0
Production	131.9	146.2	182.7	154.2
Total 2/	163.6	172.1	199.5	203.7
<u>Domestic disappearance</u>				
Food 3/	33.2	38.4	42.3	44.0
Seed	4.8	5.1	4.4	3.2
Brewers' use	11.2	11.0	12.7	13.8
Total	49.2	54.5	59.4	61.0
<u>Exports</u>	82.6	91.4	82.1	67.5
Residual 4/	6.1	9.7	9.0	10.0
Total disappearance	137.9	155.6	150.5	138.5
Ending stocks, July 31	25.7	16.5	49.0	65.2
<u>Million acres</u>				
<u>Area</u>				
Planted	2.89	3.38	3.83	3.29
Harvested	2.87	3.31	3.79	3.25
Allotment/nat'l program	1.80	1.80	1.80	--
<u>Pounds per acre</u>				
Yield per harvested acre	4,599	4,413	4,819	4,742
<u>Dollars per cwt</u>				
<u>Prices</u>				
Received by farmers	10.50	12.80	9.05	8.00
Loan rate	6.79	7.12	8.01	8.14
Target rate	9.05	9.49	10.68	10.85

1/ Consolidated supply and disappearance of rough and milled rice. Milled-rice data converted to rough-rice basis using annually derived extraction rates as factors. 2/ Includes imports. 3/ Includes shipments to U.S. territories and rice for military food use. 4/ Results from losses in drying, storage, handling, and milling and from errors in estimation.

In This Issue

	Page
U.S. Rice Situation and Outlook for 1982/83	4
World Situation and Outlook	8
Special articles:	
Impact of the 1983 Rice Program on Ending	
Stocks by Type	10
Returns to Selected Rice Marketing Strategies	12
Index of tables	26

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The next *Rice Situation* will be published in September 1983.

Summary

Producers Enroll Heavily in 1983 Program

Producers enrolled 3.8 million acres in the 1983 rice program—96 percent of the rice base acreage, the highest proportion of all the program crops. Preliminary estimates published by USDA indicate that 1983/84 U.S. production may fall nearly 30 percent, to about 110 million cwt. More than 3.4 million acres were enrolled in the payment-in-kind (PIK) program, and more than 400,000 in only the acreage reduction and paid land diversion program (ARP/PLD). Anticipation of this high degree of participation may have helped increase rice prices since December. January rough rice prices averaged \$8.05 per cwt, while February prices averaged \$8.41—nearly 10 percent higher than the average during August-December 1982.

If 1983 rice plantings are reduced as much as the early enrollment figures indicate, and if normal weather prevails and total use increases moderately, ending stocks in 1983/84 could well drop by half of this season's estimated carryover.

Producers who signed up for only the ARP/PLD program can still choose not to comply and to increase acreage. But those who signed up for PIK will incur a penalty for noncompliance. Since PIK participation is heavy, the early production estimate of 110 million cwt

is unlikely to overstate output significantly, assuming normal weather. Add to the production estimate 65 million cwt in beginning stocks, and rice supplies in 1983/84 could total just over 176 million cwt, down nearly 14 percent from this year. Domestic use in 1983/84 is forecast at 64.5 million cwt, but exports may not exceed this season's estimated 67.5 million. Lower supplies and slightly increased total disappearance imply a 1983/84 carryover of around 34 million cwt. Based on enrollment figures, 1983/84 could turn out to be more than a transition period to lower stocks; the season will likely provide some long-awaited price strength.

Widespread participation in the 1982 ARP and lower yields produced a 1982/83 rice crop 16 percent smaller than a year earlier. But the harvest of 154.2 million cwt was not low enough to offset unprecedented beginning stocks of 49 million cwt, so total supplies reached a record 203.7 million. New to this issue of the *Rice Situation* is an estimate of 1982/83 supply and use of U.S. rice by type. The analysis suggests that long grain carryover may top 30 million cwt.

Domestic disappearance this season is forecast at 61 million cwt, up slightly from 59.4 million last year. Lower, more stable prices for milled rice have helped buoy the domestic market, increasing shipments to the

territories by 6 percent and use by brewers also 6 percent. But the big disappointment of the marketing year has been exports, currently forecast at 67.5 million cwt—down 18 percent from the previous year. A world recession coupled with strong competition from Thailand will likely keep the export outlook for the United States from significantly improving this season. By mid-March, outstanding sales and shipments of milled rice totaled only 1.3 million tons, compared with 1.7 million last year at the same time.

Record supplies and weak demand point to carryover stocks of 65 million cwt, the largest on record. Despite the recent price rise, weak prices early in the season and the anticipation of huge carryovers have increased loan use. By mid-March, Commodity Credit Corporation (CCC) loans outstanding covered 52 million cwt of the 1982 crop—more than twice the amount outstanding on the 1981 crop a year earlier. Reflecting the excess supplies, August-December prices for rough rice averaged \$7.69 per cwt down from the \$9.05 last season and 45 cents below the national average loan rate. As a result, \$250 million will be paid to producers who participated in the 1982 ARP. Participants will receive the maximum deficiency payment rate of \$2.71 per cwt.

World rice production in 1982/83 is forecast at 408 million tons, down 1 percent from the record 1981/82 harvest. But world consumption will likely exceed production by nearly 2 percent, drawing ending stocks down to the lowest level in the past decade. While much of the drawdown is occurring in India and Japan, the reduction in carryover in most exporting countries points to further price strength. World trade in calendar 1983 is forecast at 12.6 million tons, up from 11.7 million in 1982.

This issue of the Rice Situation includes a special article analyzing 1983/84 supply and disappearance by type of rice, assuming different levels of production. Disappearance estimates based on historical trends and domestic rice distribution surveys indicate that as overall ending stocks are drawn down, long grain stocks will decline much faster than medium grain stocks. All rice producers may benefit, however, as an improved long grain market boosts average prices for rough rice. A second special article computes net returns using two alternate strategies for marketing rice—storage with a later sale and selling at production cost plus a markup. Storage provided highest returns over a variety of cost situations, while selling at cost-plus generally reduced the variability of returns.

Rice Situation

U.S. Rice Situation and Outlook for 1982/83

Record Supplies Despite Acreage Reductions and Lower Yield

U.S. rice producers harvested 3.25 million acres in 1982, about half a million less than the previous year. Widespread participation in the 1982 15-percent acreage reduction program resulted in 422,000 acres being withdrawn for conservation use. Nationally, 1982 yields averaged 4,742 pounds, lower than the record 4,819 pounds per acre in 1981. Compared with 1981, average yields declined 5 percent in Arkansas and Mississippi, but rose nearly 10 percent in Missouri.

Overall, declines in rice production ranged from 8 percent in Louisiana to 33 percent in Mississippi, with Arkansas and Texas both showing declines of 18 percent. Only Missouri increased its rice harvest in 1982, by 16 percent.

The lower acreage and yields combined to produce 154.2 million cwt of rice in 1982, down 16 percent from 1981. U.S. production of long grain rice fell 14 percent, while medium and short grain varieties were down 18 and 15 percent, respectively. California harvested 14,000 acres of long grain rice for the first time, with an average yield per acre of 6,050 pounds, thus contributing 847,000 cwt to long grain supplies. In the South, two States increased production of long grain—Louisiana by 4 percent and Missouri by 15. But long grain production declined by 14 percent in Arkansas, 18 percent in Texas, and 32 percent in Mississippi. Medium grain rice production fell substantially in every State except Missouri,

which increased production by 25 percent. Medium grain output fell 39 percent in Arkansas and 21 percent in Texas. Short grain production also declined, falling by 16 percent in California, 2 percent in Arkansas, and 31 percent in Missouri.

From a total rice harvest of 154.2 million cwt, long grain made up almost 95 million cwt, medium grain 50.4, and short grain 9.2. Despite the lower production, 1982/83 rice supplies reached a record 203.7 million cwt. Unprecedented beginning stocks of 49 million cwt—nearly triple beginning stocks on August 1, 1981—overwhelmed the effect of the acreage reduction program.

August-December Brewers' Use Up, Food Use Down from Last Year

Total domestic disappearance, which includes food, beer, and seed use, is forecast at 61 million cwt for 1982/83, up only 1.6 million from 1981/82. Seed for the 1983 crop is currently estimated at 3.2 million cwt, down significantly from last year's 4.4 million, reflecting a second year of acreage reduction.

Rice used by brewers in 1982/83 is forecast at 13.8 million cwt. The 9-percent increase over 1981 reflects continued growth in beer manufactured using rice. For the first 5 months of the marketing year (August-December), rice used by brewers was up 6 percent from a year earlier. Although total beer production for the August-December period increased over last year, favorable prices for brewers' rice also undoubtedly helped demand. Brewers' prices during August-December were steady, averaging \$6.51 per cwt, \$2.16 below 1981's average.

Nevertheless, brewers' use will have to exceed the August-December pace to reach the forecast level.

August-December 1982 shipments to territories increased 6 percent from the previous year. Shipments to Puerto Rico continued to increase, rising nearly 6 percent from August-December 1981 and almost doubling 1980's total, primarily due to more favorable milled prices for medium and short grain rice.

Food use (including shipments to territories) during 1982/83 is presently forecast at 44 million cwt, up about 4 percent from 1981/82. August-December 1982 use, however, was trailing well behind a year earlier. Production of milled rice during this period was also down considerably from the preceding year, falling 14 percent. Since food use is calculated as a residual, the pace of the first 5 months is not a good indicator for the marketing year. As milled rice production increases, the residual claimed by food use will increase.

Export Picture Continues Weak

U.S. rice exports for 1982/83 are presently forecast at 67.5 million cwt, rough equivalent (2.2 million metric tons, milled basis). This would be the lowest level since 1976/77. By March 17, accumulated exports (as reported by USDA's *Export Sales*) totaled 1.3 million tons, lagging far behind last year's 1.7 million at this time. Of the accumulated exports thus far, over 70 percent have been long grain brown and milled, destined for the Middle East and Africa. Outstanding sales—often a rough indication of the progress of exports—are well ahead of last year's level at 585,000 tons, 183,300 more than last year. However, about 40 percent of the outstanding sales are attributable to South Korea's remaining purchase of medium grain brown rice, whose sales have lagged. Excluding sales to South Korea, outstanding sales plus shipments totaled 1.65 million tons by March 17. To reach the export forecast for 1982/83, monthly exports will have to average nearly 200,000 tons from March through July. But a 4-week moving average shows the U.S. export pace trailing well below this rate. The bright spots for U.S. rice exports continue to be the Middle East and Africa. On the strength of P.L. 480 shipments, exports to Africa are running slightly ahead of last year's level at mid-March. In the Middle East, Iraq and Saudi Arabia continue to be strong markets for U.S. rice. However, sales and shipments to Nigeria by March 17 totaled 93,000 tons, only half the level of a year earlier.

In January, new funds were allocated to the blended credit program, which will help rice exports during fiscal 1983. The program blends Government-guaranteed private credit with interest-free direct Government credit to produce lower interest rates, as a measure to increase exports of U.S. farm commodities. Credit totaling \$1.25 billion was allocated to the program in January in addition to \$500 million allocated last October. Under that initial credit allocation, only Yemen received export credits for rice. Since that time, blended credit agreements for rice have been negotiated with Jamaica for \$1.3 million, Iraq for \$80 million, and Morocco for \$7.5 million.

Ending Stocks Continue To Climb

Despite a 16-percent decline in production, the combination of unprecedented beginning stocks and a weak export picture will likely push ending stocks to a record 65 million cwt. Rough rice stocks on January 1, 1983,

were indicative of the anticipated buildup—they totaled 133 million cwt, 1 percent more than last year. Of this, 71.0 million cwt were long grain, 54.5 million medium, and 7.4 million short. Long grain stocks on January 1 were 63 percent of total 1982 long grain supplies, up 3 percent from 1981. Medium grain stocks were 68 percent of total 1982 supplies for this type, compared to 77 percent a year earlier. The large stocks available despite lower production emphasize the weakness in the current export market.

Rough rice stocks were also excessive in each of the major producing States. Arkansas' stocks on January 1 were equivalent to 86 percent of its 1982 production. California's rough stocks of 43.5 million cwt on January 1 reached 119 percent of its 1982 production. On-farm storage of rough rice on January 1 totaled 34.6 million cwt, compared with last year's 48.4 million. Arkansas had the largest share—almost 15 million cwt. Both Louisiana and Mississippi had nearly 5.5 million in on-farm storage, giving these three States 75 percent of the rough rice stored on farms.

Weak Prices Result in Maximum Deficiency Payment

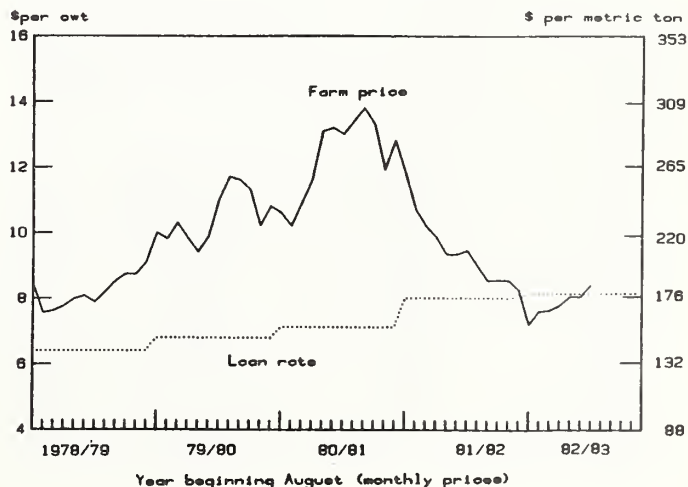
Huge U.S. supplies and lower prices from competing exporters, in the face of U.S. export prices supported by the domestic loan rate and an appreciating dollar through 1982, have reduced the U.S. share of world rice

Rice stocks by type, January 1, 1982-83

Type	Rough		Milled ¹		Total	
	1982	1983	1982	1983	1982	1983
Million cwt						
Long	72.4	71.0	4.7	6.2	77.1	77.2
Medium	53.3	54.5	1.8	1.7	55.1	56.2
Short	5.7	7.4	.5	.7	6.2	8.2
Total	131.4	132.9	7.0	8.6	138.4	141.6

¹Rough equivalent.

Rough Rice Farm Prices and Loan Rates



trade. These factors have also kept domestic prices depressed thus far this season. Average monthly rough rice prices received by farmers stayed well below the national average loan rate of \$8.14 per cwt until February 1983. August-December rough rice prices received by farmers averaged \$7.69 per cwt, the lowest level since starting the 5-month average in 1976/77. Prices during this period were \$2.71 below last year's 5-month average.

As a result of the low August-December average, participants in the 1982 acreage reduction program for rice were eligible for a maximum deficiency payment rate of \$2.71 per cwt. The payment rate represents the difference between the target price of \$10.85 per cwt and the higher of either the loan rate (\$8.14 per cwt) or the August-December average farm price. For the 1982 crop, approximately \$250 million will be distributed to 25,000 producers.

Recently, prices have begun a modest climb. January average prices for rough rice were \$8.05 per cwt, and preliminary February estimates averaged \$8.41. Part of the increase may be attributable to normal seasonal movement, but anticipation of heavy participation in the payment-in-kind (PIK) program in 1983 is probably a more significant factor.

Huge Supplies, Weak Prices Promote CCC Loan Activity

By mid-March, CCC loans outstanding covered 52 million cwt of the 1982 crop, more than double the amount on the 1981 crop last March. Dim price prospects have increased loan use. Forfeitures to the CCC by the season's end may fall from last year's 19 million cwt, perhaps to 16 million after producers receive PIK payments. CCC ending inventory in all likelihood would be much higher, except that some of the rice under loan is now slated to be used for PIK entitlements. For producers who signed up for the PIK program, any rice under loan on or after March 11, 1983, must be used as the producer's payment in kind in exchange for loan liquidation.

Of the rice under loan in Mid-March, nearly 22 million cwt were in Arkansas, with long grain accounting for over 17 million. California had over 14 million under loan, nearly all of that medium grain.

Re-Capping 1982/83—Supply and Disappearance by Type Point to Huge Medium Grain Carryover

Because rice producers are facing one of the most serious supply excesses in years, there is concern about supply problems that may be associated with types of rice. Information on supply and disappearance by type has further value given the 1983 rice program—specifically, PIK—because the huge acreage cuts in prospect for 1983 may have different effects on rice types.

Domestic rice distribution surveys and production and stock estimates can be used to construct supply and use estimates by type. Estimates are shown for long grain and medium/short grain. Medium and short grains were combined because short grain represents only a tiny portion of the overall market for rice.

Historically, long grain accounts for about 60 percent of production. In 1982, long grain supplies totaled 113.1 million cwt and medium/short supplies were 90.6 million. Beginning stocks of medium grain rice were extremely large, magnifying the medium/short grain share of the market.

Domestic use of all rice for 1982/83 is currently estimated at 61 million cwt, with 44 million estimated for food use. Previously conducted rice distribution surveys indicate that the overwhelming share of domestic disappearance—approximately 60 percent—goes to direct food use, with another 15 percent going to processed food use. Long grain rice generally makes up 67 to 70 percent of the direct food use and about 30 percent of processed use. Based on these shares, long grain food use is estimated at 26 million out of the 44 million cwt forecast for 1982 food use, or almost 60 percent. The remaining 18 million are allocated to the medium/short grain market.

Brewers' use of all rice in 1982/83 is estimated at 13.8 million cwt. Allocation among types of rice is difficult, since brewers generally use broken. Rather than allocating brewers' rice use according to anticipated whole grain purchases, use is allocated based on the availability and share of supply by type. This may at first seem a tenuous assumption, but presumably relative prices, and thus industry purchases, reflect the availability of each type of rice. Accordingly, 5.6 million of the total 13.8 million cwt of expected brewers' use is allocated to long grain, with the remaining 8.2 million coming from medium/short grain.

Seed use for the 1983 crop is expected to be about 3.2 million cwt. Reflecting relative production shares, 60 percent or 2 million of this would likely be long grain planting seed and 1.2 million medium/short.

Based on the above analysis, long grain would claim 33.6 million cwt of the total estimated 61 million in domestic use. Medium/short grain would then account for 45 percent, or 27.4 million cwt.

Estimated 1981/82 supply and disappearance, by type of rice.

Item	Total	Long	Medium/short
<i>Million cwt</i>			
Beginning stocks	16.5	8.0	8.5
Production	182.7	110.4	72.3
Supply ¹	199.5	118.5	81.0
Domestic use	59.4	34.0	25.4
Exports	82.1	58.0	24.1
Residual	9.0	8.4	.6
Ending stocks	49.0	18.1	30.9

¹Includes imports.

Estimated 1982/83 supply and disappearance, by type of rice.

Item	Total	Long	Medium/short
<i>Million cwt</i>			
Beginning stocks	49.0	18.1	30.9
Production	154.2	94.6	59.6
Supply ¹	203.7	113.1	90.6
Domestic use	61.0	33.6	27.4
Exports	67.5	43.0	24.5
Residual	10.0	6.0	4.0
Ending stocks	65.2	30.5	34.7

¹Includes imports.

Export disappearance in 1982/83 is estimated at 67.5 million cwt. By early February, accumulated exports totaled almost 33 million cwt. Of this, approximately 22 million were long grain shipments. Several options can be used to determine 1982/83 export estimates by type. The first is to assume that the current trend will persist. With 22 million cwt of long grain exported during the first half of the marketing year, a continuing trend implies total long grain exports of 44 million cwt, or about 62 percent of the total estimated rice exports. A second option is to base current year exports by type on shares during previous years. An obvious drawback to this method is that it masks market shifts. In 1981/82, long grain shipments accounted for roughly 70 percent of total exports; in 1980/81, long grain was only 57 percent of the total exported. However, 1980/81 shipments included an unusually large purchase of medium grain rice by South Korea. Reducing South Korea's imports to a level more in line with years prior to and after this purchase, the share of total exports accounted for by long grain in 1980/81 rises to 68 percent.

Based on the above observations, allocations for 1982/83 estimated exports by type were made by selecting the midpoint of the range of long grain export shares. The low of 57 percent in 1980 and the high of 70 percent last season yield a midpoint of approximately 63 percent. Actually, this alternative does not deviate significantly from the first, derived from assuming that the present trend of long grain exports continues. Therefore, 43 million of the estimated 67.5 million cwt of rice exported this season would be long grain, leaving 24.5 million as medium/short grain.

After allocation of the residual among types using the same percentages as production, long grain disappearance in 1982/83 totals 82.6 million cwt. Medium/short grain disappearance is 55.9 million cwt.

This analysis illuminates the problem of a prospective stock buildup. Ending stocks of all types are expected to rise this year, but stocks of medium grain, at almost 35 million cwt, will likely exceed long grain, causing another year of unwieldy ending stocks.

USDA Issues Report

On Enrollment in 1983 Rice Program

USDA issued a special report on March 22 detailing farmers' signup in the 1983 acreage reduction and PIK programs. Based on the report, rice producers enrolled 3.84 million acres in the 1983 program. About 3.41 mil-

lion acres were signed up in PIK, and 427,726 acres in the ARP/PLD program. For each acre enrolled in PIK and devoted to conservation use, farmers will receive rice equal to 80 percent of the farm's program yield times the number of PIK acres. Based on the report, producers may devote 1.72 million acres to conservation use in 1983. Complying producers will also be eligible for price support protection based on a loan rate of \$8.14 per cwt and a target price of \$11.40, and receive a cash diversion payment based on a rate of \$2.70 per cwt.

Arkansas rice producers, according to the report, enrolled a total of almost 1.5 million acres, of which 1.2 million were in the PIK program. About 606,000 acres were enrolled by Texas producers—22,000 in ARP/PLD and 584,000 in PIK. Louisiana producers signed up nearly 703,000 acres in all, with 79,000 just in ARP/PLD and 624,000 in PIK. All together, producers in the South enrolled 81 percent of the total U.S. rice base acreage—3.2 million acres. Participation by southern producers in the 1983 rice program could withdraw 645,000 acres under ARP/PLD and 790,000 under PIK for conservation uses.

California rice producers enrolled almost 611,000 acres in the 1983 program—31,000 in ARP/PLD and 580,000 in PIK.

Eligibility for rice payments under PIK requires compliance with the ARP/PLD program. Final compliance estimates will not be available until much later in the year, but the special report shows the maximum amount of acreage that could be withdrawn for conservation use under the 1983 program, assuming full compliance.

Outlook for 1983/84

Cautiously Optimistic

With the introduction of the PIK program, and what may prove to be a tenuous domestic and world economic recovery, rice producers will face many uncertainties as they enter the 1983 marketing year.

Early estimates by USDA for 1983/84 supply and disappearance imply a note of cautious optimism. Heavy program participation—especially in PIK—points to production of 110 million cwt. Though producers may still adjust acreage, farmers enrolling acres in the PIK program will incur a penalty for noncompliance. Thus, even though production will vary from this early estimate, this probability of significant change in production is reduced.

Rice—1983 enrollment by program

State	Acreage reduction and paid diversion only		PIK (10-30%)		Total	
	Base acres	RCU acres ¹	Base acres	RCU acres ^{1, 2}	Base acres	RCU acres ¹
Arkansas	266,285	53,257	1,191,957	581,867	1,458,242	635,124
California	31,287	6,257	579,303	279,984	610,590	286,241
Florida	1,667	333	10,305	5,152	11,972	5,485
Louisiana	79,427	15,885	623,540	285,990	702,967	301,875
Mississippi	7,939	1,588	350,687	173,180	358,626	174,768
Missouri	18,752	3,750	67,053	27,399	85,805	31,149
Oklahoma	0	0	792	395	792	395
Tennessee	0	0	271	135	271	135
Texas	22,369	4,474	583,783	280,826	606,152	285,299
U.S. total	427,726	85,545	3,407,691	1,634,928	3,835,417	1,720,473

¹RCU = Required conserving use acres. ²Includes applicable acreage reduction and paid (cash) diversion acres.

Total supplies for the 1983/84 season are forecast at 176 million cwt, down almost 14 percent from this year's record. With domestic use forecast at 64.5 million, but no improvement expected in exports, total use next season may only increase 3 percent from this season's disappointing 138.5 million cwt. Based on forecast production and disappearance, ending stocks in 1983/84 could fall to 34 million cwt, significantly improving the stocks-to-use ratio at 26 percent. A carryover of this size could well provide producers with some long-awaited price strength early in the new season.

World Situation and Outlook

World Production is Forecast To Decline

World rice production in 1982/83 is forecast at 275 million metric tons, milled basis (408 million tons, rough basis), a 1-percent decline from last year. Accounting for approximately three-eighths of world rice output, China expects record production despite a decline in acreage. Record output is also likely in other Asian producers—Indonesia, Bangladesh, Burma, and Vietnam. The harvest is expected to be at last year's level in Japan and slightly better in South Korea. Poor weather has resulted in lower production of nearly 13 million tons in India and 1.5 million in Thailand, and Pakistan's output has fallen slightly. Excluding India and China, foreign production will be nearly unchanged from last year.

World consumption, estimated at a record 280 million tons, milled basis, will likely force ending stocks down to 17 million tons. The projected decline in India and Japan totaling 3.6 million tons represents almost 75 percent of the total decline in world stocks. While India will probably lower consumption because of a smaller crop, consumption increases in China and other countries will more than offset the Indian decline. Indonesian imports are expected to increase significantly in 1983. This, combined with the possibility of larger Brazilian imports, points to a drawdown of stocks in exporting countries and further strengthening of world rice prices.

South Korean Import Needs Drop; Indonesian Purchases Up

South Korea's 1982/83 rough rice harvest, at 7.2 million tons, exceeded the previous 2 years' crops. High stocks there will likely mean Korean imports will be very low. To date, South Korea has not fulfilled the remainder of its earlier agreement to purchase 1981-crop rice from the United States. As of early March, roughly 250,000 tons remain to be shipped. South Korea's import needs for 1982/83 are currently forecast at 200,000 tons, well below levels of 1979/80-1980/81.

Bad weather has likely hurt the wet season crop and should sharply affect the dry season rice crop in Indonesia. As a result, Indonesian rice imports are expected to move up sharply in 1983. By the end of this season, stocks there are expected to fall to 1.7 million tons. In an attempt to maintain carryover stocks and price stability, Indonesia may raise imports from 1982's low level of 332,000 tons to 1.8 million.

Both South Korea and Indonesia have made progress in improving rice production practices. In Indonesia, improvements in fertilizer use and seed quality have raised yields and helped minimize threats from weather, pests, and disease. South Korea has also once again

increased its acreage planted to high-yielding varieties of rice, which are reported to have 18 percent better yields than traditional varieties. Thus, the early drought in the South Korean growing season was partially offset by improved planting practices, and subsequent favorable growing conditions.

Thailand Continues To Lead in Exports; Other Countries Increase Export Targets

Because of bad weather, rough rice production in Thailand is estimated to fall by more than 1 million tons in 1982/83, to 17.3 million. However, the impact on exports is expected to be slight, since the shortfall is mainly in the glutinous rice producing area of the Northeast. In addition, Thai rice carryover from the previous year was a very favorable 1.3 million tons. Exports in 1983 are estimated at 3.5 million tons, down slightly from the record 3.6 million exported in 1982. Government policies in 1982 promoted exports by reducing costs to exporters. Lifting the rice reserve program led to aggressive marketing by traders, especially to Nigeria. The Thai Government has announced that export premiums will remain unchanged through June 1983. This announcement was designed to improve export market stability. A number of developments have combined to foster a continued favorable export outlook in Thailand: several purchasers of medium-quality rice have upgraded their imports; high-quality export markets are becoming more certain, and rice-breeding research in Thailand is focusing on improvements in yield and quality. The Thai Government has also expanded its export role, stepping up the volume and share of government-to-government rice sales compared with private sales.

Burmese rice production has shown consistent increases due primarily to increased plantings of high-yielding varieties which have improved yields. Rough rice production in 1982/83 is estimated at 14 million tons. Exports from Burma during 1983 are forecast at 800,000 tons of milled rice, an increase of 10 percent over last year. The expansion in Burmese exports has been largely in higher shipments of low-quality rice, but problems with uneven quality and delays in loading have caused some shifting by buyers from Burma to purchases from Pakistan, Thailand, and Taiwan. In order to maintain export levels, Burma has had to offer substantial discounts.

Rough rice production in Pakistan is forecast at 5.1 million tons in 1982/83, about the same as last year. Exports from Pakistan in 1982 suffered from uncompetitive high prices leading to the loss of Iranian and Iraqi markets for basmati rice. For 1983, exports have been targeted by the Government at 1.1 million tons, up from last year's disappointing 794,000 tons. The higher export targets plus large uncommitted stocks of basmati rice resulted in intense pressure to regain markets in Iran and Iraq. As a result, basmati prices were reduced from 1981/82 levels of \$700 per ton, to around \$600.

One of the most severe droughts ever experienced by India has drastically reduced crop prospects for 1982/83 to less than 68 million tons, almost 13 million below last year's record crop. Rice stocks have fallen to such low levels that it appears unlikely that the Government will follow its recent policy of maximizing rice sales to prevent the dwindling of wheat stocks and increased wheat imports. The Government is expected to reverse this course to conserve low rice stocks. There has been speculation that India may import rice, but this is

unlikely. India has imported wheat from the United States for the second year in a row, and will make adjustments in rice consumption. Given the trade agreements signed with the Soviet Union in late December, Indian rice exports in 1983 are projected at 250,000 tons, sharply lower than either of the previous 2 years when substantial quantities were bartered with the Soviets for oil and petroleum products.

Although not a major competing exporter in the past, Taiwan may make significant inroads into world rice trade. Favorable yields arising from good weather and generous Government supports have boosted Taiwan's 1982 rough rice crop to more than 3.1 million tons, despite a reduction in acreage. During the 1970s, Taiwan's principal outlet for exports was Indonesia, but good crops in that country in 1980 and 1981 have sharply lowered imports from Taiwan. As a result, Taiwan took steps to diversify its export markets. With substantial Government subsidies, Taiwan increased exports in 1982 to 307,000 tons, from the slump of 92,000 in 1981. Exports for 1983 are projected to reach 800,000 tons, a significant portion of which has already been sold.

Poor weather in Japan has led to the third consecutive crop that is lower than projected food use. The result is that Japan's ending stocks declined from a peak of 6.1 million tons in 1979/80 to an estimated 2.7 million at the end of 1981/82. By October 1983, rice carryover stocks may fall to 1.2 million tons, including 800,000 of nonfood surplus stocks. Japan's rice exports during 1983 are forecast at 400,000 tons, up from 318,000 in 1982.

U.S. Trade Prospects Dim in Face Of Recession, Strong Competition

U.S. milled rice exports for 1982/83 are forecast at 2.2 million tons, (67.5 million cwt, rough basis). The U.S. share of world trade has been declining since 1980/81, while Thailand has moved into first position as the leading world rice exporter. Good supplies in major importing countries, economic recession, a strong U.S. dollar, foreign exchange constraints in many importing countries, and strong export competition have all acted to reduce U.S. export prospects. Despite the possibility of increased strength in world prices, there is little reason to expect any significant altering of this trend for the rest of this season. Ample stocks in most consuming nations, coupled with aggressive sales postures of key

exporters, will likely keep trade volumes down in the coming months.

Sales to *Western Europe* were trailing far behind last year's level by mid-March. Sales and shipments to Italy, the main European market last year, are down sharply. By March 17, shipments and commitments to Western Europe totaled 290,300, far below last year's 685,200 at the same time.

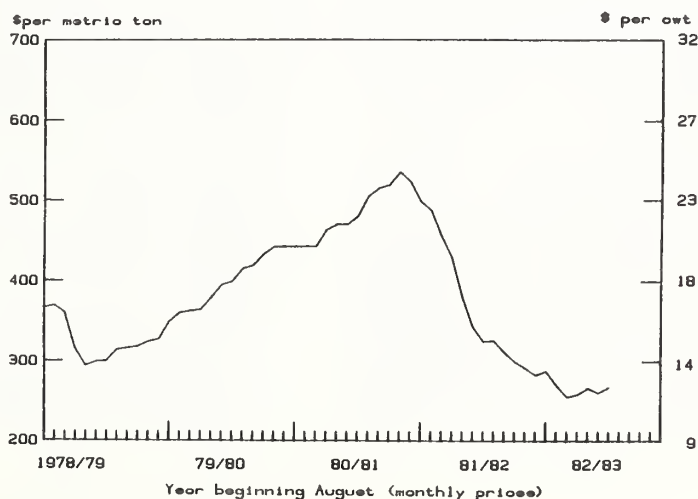
Government credits, including a blended credit agreement with Iraq and the Yemen Arab Republic, are likely to help maintain exports to the *Middle East*. For the second year, Iraq and Saudi Arabia will likely be among the leading markets for U.S. rice. Each country is expected to take 200,000-300,000 tons. Shipments by mid-March 1983 to Iraq totaled 136,200 tons, with another 99,900 in outstanding sales. Shipments to Saudi Arabia at this same time were 187,800 tons, with another 39,300 in outstanding sales. While Iran's imports are expected to increase significantly from last year, U.S. sales there are unlikely. Blended credit has enabled the Yemen Arab Republic to purchase 15,000 tons this year.

About 180,000 tons of rice were allocated under P.L. 480 to 11 *African countries* for fiscal 1983, but exporters face strong marketing challenges there. Price competition from Thailand and deteriorating financial conditions may affect the outcome of U.S. rice exports. *Nigeria* is expected to remain a leading African market for U.S. rice, but problems have arisen with foreign exchange constraints due to declining petroleum exports. By mid-March, shipments to Nigeria were 93,100 tons, down sharply from 176,500 last year. A widening band between U.S. and Thai rice prices has allowed Thailand to entice Nigeria away from U.S. exports. Except Liberia and South Africa, other African countries are expected to commercially import small amounts of U.S. rice.

Exports to *Asia* remain uncertain this year. South Korea's imports appear limited to fulfilling the remainder of its 1980 purchase agreement and there is some uncertainty about the timing of shipments of that rice. Reduced import demand by South Korea could be offset by increased exports to Indonesia under P.L. 480.

Exports to *Western Hemisphere* countries are expected to remain about the same in 1982/83 as last year. By March 17, U.S. exports totaled 163,900 tons, well ahead of last year at 124,000 tons. Sales to Peru and the possibility of larger sales to Brazil will help boost U.S. exports. Sales to Caribbean countries and Canada will remain large.

Milled Rice: Thailand Export Prices*



* White 5% broken, F.O.B. Bangkok.

Impact of the 1983 Rice Program on Ending Stocks by Type

by

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ABSTRACT: Under various levels of production for the 1983 rice program, ending stocks could decline substantially. When markets are broken down into long and medium/short grain markets, the possibility for a much lower long grain carryover is evident. With much lower long grain stocks relative to medium/short grain, prices could begin climbing even though overall stock levels remain fairly high.

The 1983 marketing year will undoubtedly be a very interesting year for the U.S. rice industry. As planting time draws near, and even though the sign-up for the 1983 program is over, there are still a few critical pieces of a marketing jigsaw puzzle that are missing, or at least uncertain. Stocks on July 31, 1983, are forecast at an unprecedented 65.2 million cwt; rough rice prices throughout the marketing year have remained depressed; and U.S. exports have been dealt a serious blow from depressed world economies and heavy competition from Thailand. These pieces of the puzzle all encourage strong participation by producers in the 1983 rice program. At the same time, however, U.S. supplies of long grain rice may tighten significantly if a large amount of acreage is withdrawn from 1983 production.

Producers enrolled a whopping 3.84 million acres in the 1983 program—3.4 million in PIK and 430,000 million in ARP/PLD alone. Based on the enrollment report, as much as 1.72 million acres could be withdrawn from production for conservation use by producers.

This paper suggests some implications for ending stocks in 1983/84 using four different levels of production: (1) a harvest of 154.2 million cwt, similar to the 1982 harvest to show what might have occurred without the PIK program; (2) a harvest of 123 million cwt, assuming better-than-expected yields, heavy planting by nonparticipants, and some early participants in the ARP/PLD program deciding to withdraw from the program; (3) production equal to 110.5 million cwt, as estimated by USDA; and (4) production equal to 100 million cwt, assuming lower yields, a high level of program compliance, and underplanting by nonparticipants.

For each level of production, a supply and use table is presented based on USDA projected use in 1983/84. Long and medium/short grain market supply and use is developed from the aggregate table.

Impacts of Alternative Production on Supply and Disappearance of All Rice

Table 1 shows the four different levels of harvest. With beginning stocks of 65.2 million cwt, total U.S. rice supplies vary from a low of 165.7 million cwt (option 4) to an alltime high of 219.9 million without a PIK program (option 1). Note that production according to early USDA estimates places supplies at 176.2 million cwt, or a drop of 13.5 percent from 1982 supplies. Using USDA estimates for domestic use, at 64.5 million cwt, and pro-

Table 1—Alternative levels of production, all U.S. rice, 1983/84

Supply and use items	Option 1	Option 2	Option 3 ¹	Option 4
Million cwt				
Beginning stocks	65.2	65.2	65.2	65.2
Production	154.2	123.0	110.5	100.0
Imports	.5	.5	.5	.5
Supply	219.9	188.7	176.2	165.7
Domestic use	64.5	64.5	64.5	64.5
Exports	67.5	67.5	67.5	67.5
Residual	10.0	10.0	10.0	10.0
Total use	142.0	142.0	142.0	142.0
Ending stocks	77.9	46.7	34.2	23.7

¹Based on estimates published by USDA, *World Agricultural Supply and Demand Estimates*, March 23, 1983 (WASDE - 147).

jecting no recovery in exports, total use in 1983/84 is estimated at 142 million cwt (including a residual 10 million).

Consider what happens to ending stocks under option 1. Without a PIK program, ending stocks would be much greater than in 1982/83. Clearly, this justified the need for further acreage cutbacks in 1983. Based on production under option 3—USDA projected harvest—ending stocks drop by almost half of the current year's estimated carryover. Prospects for price strength become much more likely under this option. Ending stocks using option 2, less compliance and heavy planting by nonparticipants, appear more manageable certainly than under option 1, but are still excessive compared with earlier years. Option 4, high compliance coupled with underplantings by nonparticipants, would reduce total ending stocks to about 24 million cwt, more in line with the carryover at the end of 1979/80.

Impacts on Long and Medium/Short Grain Markets

The basic assumptions about the different production levels and their impact on long and medium/short grain markets, (tables 2 and 3) are:

- For each option, production was allocated on the basis of historical shares. Thus, roughly 60 percent of U.S. rice production is long grain rice, with the remainder medium/short grain.

- Beginning stocks were assumed to be roughly 49 percent long grain, with the bulk allocated to medium/short grain to reflect a continued stock buildup of medium grain because of weaker export demand for that type.
- Assumptions about use by type were presented earlier in this situation (see "1982/83 Supply and Disappearance by Type"). Long grain rice is presumed to account for 59 to 62 percent of domestic disappearance; 60 percent is used here. The share of total exports allocated to long grain is 63 percent, with medium/short grain claiming the remaining 37 percent.
- The residual 10 million cwt are allocated on the same basis as production: long grain accounts for 6 million cwt, and medium/short grain is allocated the remaining 4 million.

With the foregoing assumptions outlined, hypothetical impacts on ending stocks by type can now be discussed. Long grain rice production in 1982 was 94.6 million cwt. Total long grain supplies were 113.1 million cwt. Under the options presented in table 2, 1983 supplies of long grain vary from 90.9 million cwt (option 4) to 123 million under option 1. Based on the disappearance assumptions, the various options pose some interesting implications for long grain ending stocks. Ending stocks of long grain rice in 1981/82 were 18.1 million cwt; in 1980/81, they were 8 million. Options 2 and 3 both lower ending stocks of long grain within this range. In the event of bad weather, long grain ending stocks could drop even further. Option 1 seriously overburdens long grain stocks. On the other hand, under option 4, long grain supplies are barely adequate to meet demand. A significant increase in the price of long grain rice would be required to allocate scarce supplies and maintain a higher level of long grain carryover than the 3 million suggested by this analysis.

The medium/short grain rice supply in 1982 was an estimated 90.6 million cwt. Production of 50.4 million cwt plus a whopping 29.3 million in beginning stocks

gave medium grain 88 percent of the total medium/short grain supplies. Using production options presented in table 3, medium/short grain supplies in 1983 vary from 75 million cwt (option 4) to almost 97 million (option 1).

Applying the assumptions about domestic use and exports, hypothetical disappearance of medium/short grain rice could total 54.3 million cwt. Subtracting use from supplies, ending stocks of medium/short grain rice vary substantially. Option 1 results in extremely high carryovers of over 42 million cwt. Even if production and use are very near USDA projections, ending stocks under option 3 will still remain high, at 25 million cwt.

Implications

Ending stocks under the various production options have several implications for prices, for policymakers considering extending the PIK program beyond 1983/84, and for analysts evaluating producers' sensitivity and response to excessive stocks. The wider loan differential between long and medium/short grain, which was announced for the 1983 program, could encourage the shift toward greater long grain production in some historically medium/short grain areas. Policymakers need to be aware of the distinctions between types of rice: tight long grain supplies become a real concern when acreage is heavily reduced. Obviously, if the market anticipated an extremely low long grain carryover, prices would rise accordingly, allocating scarce supplies. But the potential for severe price swings over the long run can result in a costly misallocation of resources if producers overplant upcoming crops.

This type of analysis is useful if the PIK program is used in future years, since it implies that selectively considering acreage reduction by type of rice may be an optimal means of lowering burdensome stocks, although this may make the program very difficult to administer. More acreage could be proportionately withdrawn from medium grain production, lowering ending stocks without sacrificing long grain markets. In this case, average prices for all rice would likely rise.

Table 2—Alternative levels of long grain production, 1983/84

Supply and use items	Option 1	Option 2	Option 3	Option 4
<i>Million cwt</i>				
Beginning stocks	30.5	30.5	30.5	30.5
Production	92.5	73.8	66.3	60.0
Imports	.4	.4	.4	.4
Supply	123.4	104.7	97.2	90.9
Domestic use	38.7	38.7	38.7	38.7
Exports	43.0	43.0	43.0	43.0
Residual	6.0	6.0	6.0	6.0
Total use	87.7	87.7	87.7	87.7
Ending stocks	35.7	17.0	9.5	3.2

Table 3—Alternative levels of medium/short grain production, 1983/84

Supply and use items	Option 1	Option 2	Option 3	Option 4
<i>Million cwt</i>				
Beginning stocks	34.7	34.7	34.7	34.7
Production	61.7	49.2	44.2	40.0
Imports	.1	.1	.1	.1
Supply	96.5	84.0	79.0	74.8
Domestic use	25.8	25.8	25.8	25.8
Exports	24.5	24.5	24.5	24.5
Residual	4.0	4.0	4.0	4.0
Total use	54.3	54.3	54.3	54.3
Ending stocks	42.2	29.7	24.7	20.5

Returns to Selected Rice Marketing Strategies

by

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ABSTRACT: Simulation analysis was used to determine the net returns from selected storage marketing strategies using 1972-82 price, storage, production cost data, and monthly interest rates. All returns were computed by deducting the cost of storage, borrowed money, and making allowance for the opportunity cost of a delayed sale. Storage gave the greatest average net returns, with February sales yielding the highest returns for on-farm storage and November the highest for commercial storage. The highest net returns from selling at production cost plus a markup were generally less than the best storage strategies.

KEYWORDS: Rice, returns, risk, strategies, marketing.

Introduction

Direct involvement of rice producers in marketing analysis and strategy was limited prior to 1972. U.S. rough rice prices hovered near the loan rate from 1950 through 1971. Except for seasonal movement, prices varied little, making them predictable within a very narrow range. This predictability led to a marketing system requiring almost no producer marketing expertise.

Prior to 1972, about three-fourths of the rough rice produced in Arkansas and in California was marketed through vertically integrated marketing cooperatives. A member had little direct involvement in the marketing process once the crop was turned over to the cooperative. Another major outlet during this time was the Commodity Credit Corporation (CCC). Although the rough rice season-average price exceeded the loan for all but 2 years during 1950-1971, it was only slightly higher. Consequently, record amounts of rough rice were delivered to CCC through loan forfeitures, further reducing producers' marketing experience.

With the suspension of rice acreage quotas in 1974, many growers with no prior experience in rice production added this crop to their farming enterprise. Most of the grain marketing experience of these producers was confined to soybeans or wheat, crops which are marketed much differently than rice. Producers often sold soybeans and wheat on a cash board price or on forward or basis contracts at the local elevator. Elevator operators buying soybeans and wheat were uninterested in buying rice, since for one thing the price risk could not be shifted by hedging. (A rice futures market was established in New Orleans in early 1981, but its use by elevator operations for merchandising rice is still virtually nonexistent.) Therefore, many new rice producers had to make unfamiliar decisions about the time and quantity of rice to sell.

Beginning in 1972, the lack of price movement that had prevailed earlier suddenly changed to extreme variability, making price risk a critical concern to the rice producer. The unprecedented price volatility since 1972,

coupled with sharply rising costs of production, has added a new risk dimension to the U.S. rice industry. Rice growers suddenly found themselves thrust into a new role for marketing rice. This new role created interest in marketing strategy analyses, which focus on the greatest opportunities to increase returns and/or reduce variability of returns. Toward that end, the following marketing strategies were analyzed: (1) dry and sell at harvest, (2) dry and store, then sell after varying time intervals, and (3) sell when prices reach selected levels above cost of production.

Methodology

A simulation analysis was used to determine the net returns from the different marketing strategies. The price received from storage is referred to as the net harvest price. This price was computed by taking the actual price received during a given month and subtracting from it (1) the cost of carrying rice to the given month, which is composed of the warehouse tariff for commercial storage and insurance or the variable cost of on-farm storage and (2) the interest on the production loan that is incurred until the crop is sold. It was assumed that production loans were not paid off until the producer's rice was sold; hence, storage beyond harvest incurred the interest costs on production loans. To enable the delayed sales price to be directly compared to harvest sales prices, the price net of carrying costs and interest on borrowed capital was discounted back to a harvest (September) basis.

The simulation used data for the period August 1972 through December 1982. The variables included the following:

Monthly average rough rice prices—Although not available in a continuous series by state or type, monthly average U.S. rough rice prices which have been published continuously by USDA since 1972 were used for the analysis.

Production costs—The U.S. average cost of production, published annually by the Economic Research Service (ERS), USDA, was used for the years 1975-82. Three different production cost estimates were utilized: (1) total variable costs, (2) total fixed, variable, and general farm overhead, and (3) total fixed, variable, general farm overhead, plus land, with the land cost being based on a composite of cash rent, net share rent, and the current value of owner-operated land. Cost data for the years 1972-74 were derived from the 1975 data using the index of prices paid by producers for production items, interest, taxes, and wage rates. Production costs were used to figure interest on production loans carried beyond harvest and as a basis for generating sell signals for the cost-plus marketing strategies explained in the next section.

Storage costs—Both commercial and on-farm rice storage costs were used in the analysis. Commercial storage costs were based on a sample of storage and insurance rates posted on tariff sheets of elevators having Rice Storage Agreements under the U.S. Warehouse Act. On-farm storage costs were based on a 40,000 bushel facility. These costs were derived from published reports by ERS and, for the years that data were not available, estimated using a combination of trend-line graphing and linear interpolation of the index of prices paid by producers for production items, interest, taxes, and wage rates. Only the variable cost of on-farm storage was used for the analysis, since once on-farm storage is built, it is a fixed cost and does not affect decisions to store. Drying is a function separate from storage, so all costs associated with drying were deducted from variable costs. Allocations to storage were equivalent to approximately 25 percent of total variable costs.

Prime and 91-day Treasury bill interest rates—The prime rate of interest was used to calculate the cost of money associated with delayed sales, and 91-day Treasury bill interest rates adjusted to monthly rates were used for discounting net prices.

Strategy Analysis

Producers belonging to rice marketing cooperatives normally assign all of their rice to a pool, which is marketed by the cooperative. Thus, the strategies discussed here apply to producers who market all or a part of their rice other than through cooperatives.

Dry and Sell Immediately

Producers can avoid storage and interest costs by selling their rice green or as soon as it has been dried. However, the analysis indicates that this marketing strategy would have netted on average 25 to 76 cents per cwt less than the best storage strategies (table 1). Dry and sell immediately and sell green are economical marketing strategies only when the outlook is for declining rice prices over the next 6 to 7 months. Based on seasonal price movements over the past 10 years, only twice would a producer have fared better by selling immediately than by storing and selling before March. However, there may be times when a producer's financial situation leaves no choice but to sell as soon as possible after harvest. Also, storage may not be available within an economical or practical hauling distance, precluding storage as a viable marketing option.

Table 1—Storage strategy: average net returns per cwt for rough rice sold in specified months, 1972-82

Month	Storage and borrowed capital situation ¹							
	On-farm				Commercial			
	BNM	BVC	BFVG	BFVGL	BNM	BVC	BFVG	BFVGL
Average net return (\$/cwt) ²								
Sept. ³	9.12	9.12	9.12	9.12	9.12	9.12	9.12	9.12
Oct.	9.40	9.36	9.35	9.33	9.34	9.29	9.28	9.26
Nov.	9.65	9.56	9.53	9.50	9.52	*9.43	*9.40	*9.37
Dec.	9.59	9.46	9.41	9.37	9.40	9.26	9.22	9.17
Jan.	9.68	9.50	9.45	9.39	9.42	9.25	9.20	9.13
Feb.	*9.88	*9.66	*9.60	*9.52	*9.56	9.35	9.28	9.20
Mar.	9.77	9.51	9.43	9.34	9.39	9.14	9.06	8.96
Apr.	9.72	9.42	9.32	9.21	9.28	8.98	8.89	8.77
May	9.68	9.34	9.23	9.10	9.19	8.84	8.74	8.61
June	9.35	8.97	8.85	8.70	8.80	8.41	8.29	8.15
July	9.00	8.57	8.44	8.28	8.39	7.96	7.83	7.67
Aug.	8.58	8.11	7.96	7.79	7.92	7.44	7.30	7.12
Average	9.45	9.21	9.14	9.05	9.11	8.87	8.80	8.71

¹ Borrowed capital situations are as follows:

BNM = borrowed no money.

BVC = borrowed variable costs.

BFVG = borrowed fixed, variable, and general farm overhead costs.

BFVGL = borrowed fixed, variable, general farm overhead, and land cost.

² Net harvest price = $P_m - cs - rb \cdot LOAN$

DISC

Where P_m = U.S. average rough rice price in month.

cs = storage cost from harvest (Sept.) to a given month.

rb = compounded interest (prime rate) on borrowed capital for the storage period.

LOAN = production cost loan.

DISC = opportunity cost discount factor based on monthly Treasury-bill interest rate.

³ September was selected as the harvest month since this is the month in which the bulk of the crop is harvested and dried.

* = Highest net return.

Dry and Store, and Sell Later

Storage—commonly used to avoid depressed harvest prices and take advantage of seasonal price movements—assumes that prices will strengthen and that the gain will more than offset carrying costs. These costs include storage and insurance, interest costs on borrowed capital that could have been avoided by selling earlier, and the opportunity cost or interest sacrificed by not selling sooner and investing the net returns.

The storage strategy analysis included two storage situations—on-farm and commercial—and four borrowed capital options: (1) no money was borrowed for production costs (BNM); (2) enough was borrowed to cover variable costs (BVC); (3) enough was borrowed to cover fixed, variable, and general farm overhead costs (BFVG); and (4) same as in (3) plus a land cost (BFVGL). The prices reported in table 1 are the average net returns per cwt for each storage and borrowed capital situation if all of a producer's rice is sold in a specified month. For example, if a producer with on-farm storage using the BVC option sold all of the rice in February for each of the marketing years 1972-81, the average net price would have been \$9.66 per cwt after deducting storage, insurance, interest on borrowed capital, and after taking into account the opportunity cost of money. For the other three borrowed capital options, the producer with on-farm storage facilities also would have realized the greatest average net return by selling in February. For all scenarios, average net returns would have been less if rice was held longer than 6 months—11 to 18 cents per cwt for storage until March, and 33 to 49 cents per cwt less for each month held beyond May.

Producers borrowing any production capital and storing their rice in commercial facilities would have received the highest average net return by selling in November. The cost of storage, insurance, interest on borrowed capital, and the opportunity cost of money more than offset the average gain in price beyond November. The only exception would have been a producer who had not borrowed production capital, in which case, a greater average net return would have been received by waiting until February before selling rice.

Production Cost-Plus Strategies

The production cost-plus strategy used various ratios of returns to production costs as sell signals. The three cost of production situations were: (1) total variable costs; (2) total fixed, variable, and general farm overhead; and (3) same as (2) plus a land cost, which was defined earlier. Because of the similarity of the findings, only production cost (3) results are presented. Ratios ranging from 1 to 2 times the cost of production (3) were used as sell signals. For example, a producer using 1.2 times the production cost as a sell signal would sell when the bid price met that level. If the bid price did not reach the predetermined level, the producer would continue to hold rice off the market for as long as 12 months, the storage period limit assumed for this analysis.

The highest average net return to a production cost-plus strategy was \$9.68 per cwt for rice stored on-farm with no borrowed capital and a sell signal of 1.2 times the average total cost of fixed, variable, general farm overhead, and land costs (table 2). This return was 20 cents less than the highest average net price of \$9.88 per cwt for the comparable storage and no borrowed capital situation (BNM) for the storage strategy. The only production cost-plus strategies that resulted in higher average net prices than the comparable storage strategies were commercial storage using 1.0 times the BFVG and BFVGL production costs. The average net price was \$9.41 per cwt for BFVG and \$9.39 for BFVGL, 1 and 2 cents higher, respectively, than the comparable storage strategies.

Risk Evaluation

A rice producer in a tight financial situation would consider not only net return but also price variability. The standard deviation of the net returns, a measure of price variability, was calculated for the various strategies. The cost-plus strategies consistently provided lower variability than the storage strategies (table 3). The cost for this decreased variability was generally a lower net return. For the on-farm situation, the decrease in returns for the cost-plus strategies was as much as 20

Table 2—Production cost-plus strategy: average net returns per cwt for rough rice sold at selected ratios above production cost¹

Cost-plus ratio	Storage and borrowed capital situation ²							
	On-farm				Commercial			
	BNM	BVC	BFVG	BFVGL	BNM	BVC	BFVG	BFVGL
Average net return (\$/cwt)								
1.0	9.53	9.50	9.49	*9.47	9.45	*9.42	*9.41	*9.39
1.1	9.44	9.48	9.46	9.42	9.45	9.37	9.34	9.31
1.2	*9.68	*9.55	*9.51	9.46	*9.51	9.32	9.28	9.24
1.3	9.42	9.29	9.24	9.19	9.24	9.12	9.09	9.08
1.4	9.49	9.35	9.31	9.25	9.30	9.16	9.14	9.13
1.5	9.52	9.38	9.34	9.28	9.34	9.20	9.15	9.13
1.6	9.63	9.46	9.41	9.35	9.39	9.18	9.16	9.15
1.7	9.58	9.38	9.31	9.20	9.29	9.18	9.16	9.15
1.8	9.58	9.38	9.31	9.20	9.29	9.18	9.16	9.15
1.9	9.58	9.38	9.31	9.20	9.29	9.18	9.16	9.15
2.0	9.58	9.38	9.31	9.20	9.29	9.18	9.16	9.15

¹Production cost (3) equals average total fixed, variable, general farm overhead, and land cost. ²Same as table 1, footnote 1.

* = Highest net return.

Table 3—Risk evaluation: standard deviation for the storage and cost-plus strategies with the highest returns

Storage situation	Capital situation ¹	Highest return strategy ²	
		Storage	Cost-plus ³
<i>Dollars per cwt</i>			
On-farm	BNM	2.90 (Feb.)	2.35 (Jan.)
	BVC	2.87 (Feb.)	2.38 (Feb.)
	BFVG	2.87 (Feb.)	2.39 (Feb.)
	BFVGL	2.86 (Feb.)	2.07 (Aug.)
Commercial	BNM	2.89 (Nov.)	2.41 (Feb.)
	BVC	2.79 (Feb.)	2.13 (Aug.)
	BFVG	2.79 (Feb.)	2.14 (Aug.)
	BFVGL	2.79 (Feb.)	2.15 (Aug.)

¹Same as table 1, footnote 1. ²The month is the selling month for the storage strategies and the cutoff month for the production cost-plus strategies that produced the highest net returns. ³This strategy was based on production cost (3), which equals fixed, variable, general farm overhead, and land cost.

cents per cwt (BNM) and as little as 5 cents (BFVGL). For the commercial situation, the difference between the storage and the cost-plus strategies was much smaller. The largest difference in net returns was a 5-cent-per-cwt advantage for storage until February (BNM). For two of the strategies (BFVG and BFVGL), the returns were higher for the cost-plus strategies. The strategies provided a 1- to 2-cent advantage while at the same time variability was more than 20 percent lower.

Conclusions

This analysis indicates that producers who stored rough rice commercially generally should not have delayed sales beyond November, because costs of storage and money tended to more than offset market price gains when viewed over the long run. However, because producers having on-farm storage can generally store their rice for less, they could wait until later in the marketing

year before selling. This delay gave an opportunity to take greater advantage of the seasonal rise in prices. The results show that it would have been generally better for producers with on-farm storage to wait until after the first of the year to sell, and that February yielded the highest average net price per cwt.

The analysis also indicates that the production cost-plus strategy in most cases did not provide average net returns as high as storage. However, even though average net returns for the cost strategy were generally somewhat lower, this strategy reduced the variance of returns and thus the risk of price variation. For the highly leveraged producer in a precarious financial position, reducing variation in returns may be more important than a higher average net return per cwt.

Though market strategies offer a means of improving average net returns over the long run, they are no guarantee of success. If producers who market all or a part of their rice other than through cooperatives all held rice and sold it at the same time, available rough rice supplies would far exceed demand, and the average price received for that month would quickly plummet. Lack of supplies in earlier months would cause independent mills to bid up rough rice prices, thus making the earlier season months the most profitable time to sell. One way to avoid this dilemma is a selling strategy in which all producers act in unison (monopoly), so that total supplies marketed could be controlled. However, it is highly unlikely that producers ever could or would market their rice in this manner.

Instead, there would be a tendency for producers as a whole to shift more of their rough rice sales to those months that had historically shown the greatest average returns per cwt. In time, this will shift the most profitable months to sell to some other time of the marketing season. Thus, no market strategy can long remain the most profitable one. Producers must continuously seek and study the market fundamentals and use them in combination with and as guides to selecting that market strategy or strategies that seem to offer the greatest potential for increased average net returns.

Table 2.--Rough rice: marketing year supply and disappearance 1/

Item	Year beginning August 1			August-December	
	1979	1980	1981 2/	1981 2/	1982 2/
1,000 cwt					
Beginning stocks	25,138	20,093	9,840	9,840	41,387
Farm production	131,947	146,150	182,742	182,742	154,216
Supply	157,085	166,243	192,582	192,582	195,603
Mill use	124,340	141,192	131,922	57,197	49,421
Seed	4,800	5,100	4,400	---	---
Exports	1,670	414	5,785	3,812	172
Residual 3/	6,182	9,697	9,088	189	13,068
Disappearance	136,992	156,403	151,195	61,198	62,661
Ending stocks, July 31	20,093	9,840	41,387	131,384	132,942

1/ Includes supply and disappearance of rough rice only. 2/ Preliminary. 3/ Results from losses in drying, storage, handling, and milling and from errors in estimation.

Table 3.--Milled rice: marketing year supply and disappearance 1/

Item	Year beginning August 1			August-December	
	1979	1980	1981 2/	1981 2/	1982 2/
1,000 cwt					
Beginning stocks	4,583	4,035	4,855	4,855	5,477
Production	89,820	103,037	95,074	41,060	35,280
Imports	45	160	278	73	194
Supply	94,448	107,232	100,207	45,988	40,951
Food 3/	23,868	27,957	30,695	15,099	10,352
Brewers' use	8,093	8,001	9,130	3,573	3,788
Exports	58,452	66,419	54,905	22,260	20,592
Disappearance	90,413	102,377	94,730	40,932	34,732
Ending stocks, July 31	4,035	4,855	5,477	5,056	6,219

1/ Includes supply and disappearance of milled rice only. 2/ Preliminary. 3/ Includes shipments to U.S. territories and rice for military food use.

Table 4.--Rice acreage, yield, and production, by type and State

Type and State	Area planted		Area harvested		Yield		Production	
	1982	1983 1/	1981	1982	1981	1982	1981	1982
	1,000 acres		1,000 acres		pounds		1,000 cwt	
Long grain								
Ark.	1,184.0	857.0	1,293.0	1,167.0	4,430	4,200	57,280	49,014
Calif.	14.0	20.0	.0	14.0	0	6,050	0	847
La.	270.0	240.0	259.0	269.0	4,075	4,075	10,554	10,962
Miss.	240.0	160.0	328.0	235.0	4,400	4,200	14,432	9,870
Mo.	71.0	65.0	67.0	71.0	4,100	4,450	2,747	3,160
Tex.	443.0	285.0	535.0	442.0	4,750	4,700	25,413	20,774
U.S.	2,222.0	1,627.0	2,482.0	2,198.0	4,449	4,305	110,426	94,627
Medium grain								
Ark.	141.0	102.0	223.0	139.0	4,975	4,900	11,094	6,811
Calif.	409.0	180.0	458.0	406.0	6,850	6,850	31,373	27,811
La.	330.0	210.0	408.0	329.0	4,050	4,225	16,524	13,900
Miss.	0	0	9.0	0	4,000	0	360	0
Mo.	8.5	8.0	8.2	8.5	3,900	4,700	320	400
Tex.	32.0	15.0	44.0	32.0	4,150	4,500	1,826	1,440
U.S.	920.5	515.0	1,150.2	914.5	5,347	5,507	61,497	50,362
Short grain								
Ark.	25.0	16.0	24.0	24.0	5,150	5,050	1,236	1,212
Calif.	117.0	100.0	135.0	115.0	7,085	6,950	9,551	7,993
Mo.	.5	0	0.8	0.5	4,000	4,000	32	22
Tex.	0	0	0	0	0	0	0	0
U.S.	142.5	116.0	159.8	139.5	6,770	6,614	10,819	9,227
All rice								
Ark.	1,350.0	975.0	1,540.0	1,330.0	4,520	4,290	69,610	57,037
Calif.	540.0	300.0	593.0	535.0	6,900	6,850	40,924	36,651
La.	600.0	450.0	667.0	598.0	4,060	4,160	27,078	24,862
Miss.	240.0	160.0	337.0	235.0	4,390	4,200	14,792	9,870
Mo.	80.0	73.0	76.0	80.0	4,080	4,480	3,099	3,582
Tex.	475.0	300.0	579.0	474.0	4,700	4,690	27,239	22,214
U.S.	3,285.0	2,258.0	3,792.0	3,252.0	4,819	4,742	182,742	154,216

1/ Intended plantings in 1983 as indicated by reports from farmers.

Source: Crop Reporting Board, SRS.

Table 5.--Rice stocks: rough and milled, for selected dates 1/

Date and year	Rough					Milled			
	On farms or in farm warehouses	At mills and in attached warehouses	In warehouses (not attached to mills)	In ports or in transit	Total all positions	At mills and in attached warehouses	In warehouses (not attached to mills)	In ports or in transit	Total all positions
1,000 cwt									
January 1									
1979	28,089	16,829	50,100	899	95,917	3,517	542	2,080	6,139
1980	31,021	15,038	57,278	581	103,918	3,137	810	2,123	6,070
1981	26,179	21,111	48,817	6	96,113	3,055	929	2,556	6,540
1982 2/	48,404	22,952	59,117	911	131,384	2,735	907	1,414	5,056
1983 2/	34,551	24,151	74,040	200	132,942	2,960	858	2,401	6,219
April 1									
1979	14,381	18,158	34,161	820	67,520	3,979	282	2,444	6,705
1980	12,030	15,581	39,224	563	67,398	3,500	402	2,888	6,790
1981 2/	5,977	15,078	28,673	64	49,792	3,499	1,099	3,214	7,812
1982 2/	26,807	21,289	41,773	411	90,280	4,371	725	1,689	6,785
August 1									
1979	623	8,781	15,033	701	25,138	2,531	374	1,678	4,583
1980	563	9,248	9,940	342	20,093	2,128	403	1,504	4,035
1981 2/	208	5,417	4,206	9	9,840	2,744	446	1,665	4,855
1982 2/	4,453	12,544	23,906	484	41,387	3,191	409	1,877	5,477

1/ These estimates do not include stocks located in States outside the major producing States of Missouri, Mississippi, Arkansas, Louisiana, Texas, and California. 2/ Preliminary.

Source: Rice Stocks, Crop Reporting Board, USDA.

Table 6.--Rice, rough: price support activity by States, 1982, crop as of Feb. 28, 1983

State	Placed under loan			Loans redeemed	Loans outstanding
	Farms	Warehouses	Total		
1,000 cwt					
Arkansas	9,344	16,118	25,462	3,563	21,899
Florida	24	--	24	--	24
Louisiana	3,396	2,426	5,822	583	5,239
Mississippi	4,505	778	5,283	562	4,721
Missouri	862	98	960	45	915
Texas	1,683	9,463	11,146	4,514	6,632
California	426	13,980	14,406	---	14,406
United States	20,240	42,863	63,103	9,267	53,836

SOURCE: Agricultural Stabilization and Conservation Service, USDA.

Table 7.--Rough rice: average price received by farmers, by States and United States

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Season average 1/
<u>Dollars per cwt</u>													
<u>Arkansas</u>													
1978 2/													8.47
1979	9.21	9.92	9.97	9.92	9.37	9.95	11.10	11.60	11.50	11.00	10.60	10.50	10.60
1980	9.74	9.70	10.30	11.40	12.70	12.90	12.50	13.20	14.10	13.10	12.40	12.20	12.30
1981	11.90	10.30	9.95	9.67	9.34	9.27	8.82	8.53	8.07	8.51	8.67	8.32	9.37
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.							
<u>Louisiana</u>													
1978 2/													7.50
1979	9.97	9.77	10.20	10.40	9.71	9.93	11.10	11.90	12.00	11.90	11.30	11.10	10.60
1980	10.10	9.76	10.40	11.10	13.10	13.90	14.00	14.10	14.30	13.90	4/	12.10	12.00
1981	11.60	10.80	10.30	9.61	9.24	8.74	8.29	7.84	7.75	7.90	8.00	7.87	9.36
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.							
<u>Mississippi</u>													
1978 2/													7.98
1979	6.89	10.50	10.50	9.31	8.92	9.49	11.30	11.30	10.90	4/	10.80	10.50	10.30
1980	10.30	10.40	11.60	12.20	13.40	13.70	11.80	13.60	13.70	4/	4/	4/	12.70
1981	4/	10.90	11.00	10.80	9.93	9.10	8.55	8.17	8.13	7.39	8.25	7.97	9.14
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.							
<u>Texas</u>													
1978 2/													9.27
1979	10.30	11.00	11.40	11.30	11.10	12.40	12.00	11.90	12.10	11.10	10.50	11.00	11.60
1980	11.20	11.50	12.30	13.30	13.90	13.60	13.90	14.10	14.20	13.80	12.60	13.60	12.80
1981	12.80	11.90	10.90	10.10	9.83	9.27	9.54	9.20	8.98	9.44	9.34	8.66	10.40
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.							
<u>United States 5/</u>													
1978	8.44	7.56	7.62	7.76	7.98	8.07	7.87	8.18	8.52	8.74	8.73	9.10	8.16
1979	10.00	9.81	10.30	9.83	9.41	9.88	11.00	11.70	11.60	11.30	10.20	10.80	10.50
1980	10.60	10.20	10.90	11.60	13.10	13.20	13.00	13.40	13.80	13.30	11.90	12.80	12.80
1981	11.80	10.70	10.20	9.86	9.34	9.34	9.46	8.99	8.54	8.55	8.54	8.25	9.05
1982 3/	7.19	7.60	7.63	7.78	8.06	8.05	*8.41						

1/ State and U.S. season average prices include an allowance for unredeemed loans and purchases by the Government, valued at the average loan rate, by States. Monthly prices do not include this allowance.
 2/ Monthly prices by States discontinued September 1976 to July 1979. 3/ As of August 1982, prices not reported by States. 4/ Not published separately to avoid disclosure of individual operations. 5/ California is excluded in the monthly averages but is included in the U.S. season average. *Mid-month.
 N.A. = Not available.

Source: Agricultural prices, Crop Reporting Board, SRS, USDA.

Table 8.--Milled rice: average price for U.S. No. 2, f.o.b. mills, at selected milling centers

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
<u>Dollars per cwt bagged</u>													
<u>Long 1/</u>	<u>Southwest Louisiana</u>												
1979	21.50	21.50	22.05	22.50	21.00	20.60	22.50	24.30	24.00	23.25	21.80	20.90	22.15
1980	20.75	22.00	23.40	25.00	26.75	27.00	27.25	27.70	28.25	28.00	27.90	27.50	25.95
1981	26.40	24.30	23.25	21.90	20.75	19.80	18.60	18.00	17.55	17.60	17.20	17.00	20.20
1982 2/	17.50	17.40	17.50	17.55	18.40	18.35	17.50						
	<u>Houston, Texas</u>												
1979	21.10	21.25	22.30	22.10	21.10	20.10	22.75	24.80	24.10	23.00	21.00	21.00	22.05
1980	21.00	21.70	23.10	24.75	26.55	26.55	25.75	27.10	27.75	28.00	27.40	27.00	25.55
1981	25.00	24.85	23.50	22.60	22.00	21.75	20.20	19.20	19.00	19.00	18.75	17.75	21.15
1982 2/	18.25	18.75	18.00	18.00	18.00	19.00	19.00						
	<u>Arkansas</u>												
1979	21.50	23.50	24.00	23.00	21.35	20.10	22.40	24.00	23.75	22.25	21.50	20.50	22.30
1980	20.60	22.00	23.40	24.90	26.10	26.10	25.75	26.70	27.50	28.00	27.90	27.50	25.55
1981	26.40	24.30	23.05	22.30	20.85	19.60	19.00	18.20	17.55	17.40	17.20	16.60	20.20
1982	17.10	17.00	17.00	17.55	18.40	18.35	17.50						
<u>Medium 1/</u>	<u>Southwest Louisiana</u>												
1979	19.40	20.00	20.40	20.50	19.60	20.00	22.60	23.80	24.00	23.60	21.80	20.90	21.40
1980	20.50	20.80	21.60	24.40	26.40	27.00	27.10	27.50	27.55	28.00	28.00	27.75	25.55
1981	26.40	24.20	22.90	21.15	20.00	18.75	17.75	16.10	15.95	16.40	16.20	16.00	19.30
1982 2/	16.50	16.50	16.45	16.65	17.75	17.30	16.50						
	<u>Arkansas</u>												
1979	19.50	22.25	22.50	22.40	21.50	21.40	22.60	24.00	23.90	22.25	21.55	20.50	20.05
1980	20.60	21.30	22.50	24.00	25.75	26.10	25.75	26.70	27.40	28.00	28.00	27.50	25.30
1981	26.40	24.10	22.95	21.30	19.85	18.60	17.90	17.05	16.50	16.40	15.90	15.60	19.40
1982 2/	16.10	16.50	16.10	16.65	17.75	17.10	16.50						
<u>Medium 3/</u>	<u>California</u>												
1979	22.50	23.00	23.00	23.00	23.00	23.00	25.10	24.70	23.00	23.00	23.00	23.00	23.30
1980	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.70
1981	30.00	27.60	24.50	22.80	21.40	20.50	19.10	18.45	16.90	16.90	16.70	16.40	20.95
1982 2/	16.25	16.10	15.55	15.50	15.50	16.50	16.00						
<u>Short 3/</u>													
1979	20.50	21.00	21.00	21.00	21.00	21.00	23.00	23.00	23.00	23.00	23.00	23.00	21.95
1980	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.70
1981	30.00	28.25	25.75	23.90	22.00	22.00	20.25	19.50	18.25	18.25	18.25	18.10	22.05
1982 2/	17.20	16.70	15.55	15.50	15.50	16.90	16.00						

1/ U.S. No. 2--broken not to exceed 4 percent. 2/ Preliminary. 3/ U.S. No. 1.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Table 9.--Rice by-products: monthly average price, southwest Louisiana

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
<hr/>													
Milled, long second head	<u>Dollars per cwt, bagged 1/</u>												
1979	8.25	8.45	9.00	9.50	9.50	10.10	11.00	11.90	12.50	12.50	12.50	12.25	10.60
1980	11.05	10.70	11.00	11.15	12.45	12.90	12.75	13.55	13.40	14.45	14.55	14.10	12.65
1981	13.00	11.90	11.00	11.00	11.00	10.60	10.00	8.60	9.25	10.00	10.00	10.00	10.55
1982	10.00	9.75	9.75	9.75	9.75	9.75	9.75						
Rice bran, f.o.b. mills	<u>Dollars per ton 2/</u>												
1979	58.00	61.50	79.80	85.90	88.85	94.15	60.75	51.60	52.00	62.75	65.50	66.75	68.95
1980	76.90	84.70	86.40	95.50	N.Q.	101.90	73.60	59.10	57.50	60.00	71.60	69.15	76.05
1981	51.50	49.60	52.75	59.90	73.65	82.50	64.35	50.40	55.50	57.50	61.10	N.Q.	59.90
1982	52.80	53.00	54.00	77.65	85.00	77.50	52.15						
Rice millfeed, f.o.b. mills	<u>Dollars per ton 2/</u>												
1979	20.35	19.25	25.90	30.25	40.65	45.65	18.15	13.50	11.00	11.25	11.10	15.25	21.85
1980	29.50	37.40	35.00	36.90	48.40	54.00	15.00	11.00	14.95	17.00	27.00	31.40	29.80
1981	22.60	10.90	17.75	22.00	30.65	29.75	16.50	13.15	13.40	15.40	19.40	N.Q.	19.25
1982	16.00	16.75	15.25	26.15	35.00	45.00	13.50						

1/U.S. No. 4 or better. 2/Prices quoted as bulk. N.Q. = Not quoted.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Table 10.--Brewers prices: monthly average price for Arkansas brewers' rice and New York brewers' corn grits

Year and State	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
<hr/>													
Arkansas	<u>Dollars per cwt</u>												
1979/80	7.05	7.30	7.90	8.25	8.50	9.00	9.40	9.65	9.75	9.75	9.75	9.75	8.85
1980/81	9.75	9.75	9.80	10.10	10.00	10.00	10.00	10.00	10.00	10.00	9.60	9.50	9.90
1981/82	9.30	9.00	8.55	8.25	8.25	8.20	7.60	7.40	7.30	7.00	7.00	6.80	7.90
1982/83	6.55	6.50	6.50	6.50	6.50	6.50	6.50						
New York	<u>Dollars per cwt</u>												
1979/80	N.Q.	9.65	9.89	9.69	9.99	9.90	10.10	10.05	10.10	10.24	10.27	11.20	10.10
1980/81	11.60	12.11	12.26	12.74	12.42	12.44	12.60	12.64	12.72	12.42	12.57	12.85	12.45
1981/82	12.22	10.45	10.16	9.96	9.97	9.97	10.28	10.48	10.82	10.75	10.66	10.43	10.51
1982/83	9.91	9.75	9.60	9.74	9.78	10.07	10.52						

N.Q. - Not quoted.

Source: Rice Market News, Agricultural Marketing Service, USDA, and Milling and Baking News.

Table 11.--World rice production and stocks: selected countries or regions 1/

Country or region	Crop year 2/				1982/83 as of March 14
	1978/79	1979/80	1980/81	1981/82	
	<u>Million metric tons</u>				
Bangladesh	19.3	19.1	20.8	20.5	21.2
Burma	10.6	9.8	13.3	13.6	14.0
China, Mainl.	136.9	143.8	139.9	144.0	154.0
India	80.7	63.6	80.5	80.5	67.6
Indonesia	25.8	26.3	29.7	32.8	32.8
Japan	15.7	14.9	12.2	12.8	12.8
Korea, Rep. of	8.3	7.3	6.2	7.0	7.2
Pakistan	4.9	4.8	4.7	5.1	5.1
Thailand	17.5	15.8	17.4	18.8	17.3
Subtotal	319.7	305.4	324.7	335.1	332.0
Argentina	0.3	0.3	0.3	0.4	0.3
Australia	0.7	0.6	0.7	0.8	0.4
Brazil	7.6	9.6	8.6	9.5	9.0
EC-10	1.1	1.2	1.1	1.0	1.1
All others	51.0	54.2	55.6	57.4	58.4
Total non-U.S.	380.4	371.2	391.0	404.2	401.1
U.S.	6.0	6.0	6.6	8.3	7.0
World total	386.5	377.2	397.6	412.5	408.1
Ending stocks 3/					
Non-U.S.	26.5	23.1	21.7	20.3	14.9
U.S.	1.0	0.8	0.5	1.6	2.1
World total	27.5	23.9	22.2	21.9	17.0

1/Production is rough basis, but ending stocks are milled basis. 2/World rice harvest stretches over 6-8 months. Thus, crop year represents the crop harvested in late 1978 and early 1979 in the Northern Hemisphere and the crop harvested in early 1979 in the Southern Hemisphere. 3/Stocks are based on an aggregate of different local marketing years, and should not be construed as representing world stock levels at a fixed point in time. Also, stocks data are not available for all countries.

Source: World Grain Situation, Foreign Agricultural Service, USDA.

Table 12.--World rice trade (milled basis): exports and imports of selected countries or regions 1/

	Calendar year				
Country or region	1979	1980	1981	1982	1983 as of March 14
	<u>1,000 metric tons</u>				
EXPORTS					
United States	2,267	2,977	3,008	2,487	2,300
Argentina	95	107	110	125	100
Australia	400	321	335	600	300
Burma	590	675	674	725	800
China, Mainl.	1,053	1,116	583	500	900
China, Taiwan	409	261	92	307	800
EC-10	744	804	785	601	869
Egypt	95	178	134	25	25
Guyana	86	81	78	40	60
India	340	501	1,031	602	250
Japan	564	653	795	318	400
Korea, N.	234	284	200	250	300
Nepal	100	10	43	50	0
Pakistan	1,366	968	1,127	794	1,100
Philippines	127	231	93	0	100
Thailand	2,696	2,700	3,049	3,623	3,500
Uruguay	115	165	220	217	225
Other	309	575	494	433	566
WORLD TRADE	11,590	12,607	12,851	11,697	12,595
IMPORTS					
Bangladesh	652	168	34	415	300
Brazil	711	239	20	102	200
Canada	90	95	105	108	105
China, Mainl.	71	18	110	250	100
Cuba	161	224	200	200	200
East Europe	321	332	366	334	342
EC-10	959	889	1,277	1,075	1,016
Hong Kong	361	359	360	360	360
Indonesia	1,934	2,040	543	332	1,750
Iraq	382	379	350	386	475
Iran	371	500	600	600	650
Ivory Coast	257	290	379	350	350
Korea, S.	355	822	2,292	237	221
Kuwait	90	100	110	110	110
Malagasy	159	177	193	360	300
Malaysia	239	167	322	388	350
Mexico	34	128	66	16	20
Nigeria	241	387	658	649	650
Peru	150	251	103	58	50
Portugal	75	20	128	110	75
Saudi Arabia	496	475	500	500	500
Senegal	259	228	321	350	425
Singapore	214	187	200	220	220
South Africa	121	126	134	130	128
Sri Lanka	211	189	168	200	160
Syria	128	39	100	110	110
U.A. Emirates	175	350	225	250	250
USSR	631	694	1,283	750	750
Viet Nam, Soc. Rep.	250	47	140	130	100
Other	1,492	2,687	1,564	2,617	2,328
WORLD TRADE	11,590	12,607	12,851	11,697	12,595

Source: World Grain Situation, Foreign Agriculture Service, USDA.

Table 13.--U.S. milled rice exports by type of sale

Fiscal year 1/	Commercial	Under Government programs				Total exports
		Title I 2/	Title II 3/	Aid 4/	Total	
		<u>1,000 metric tons</u>				
1978	1,665	466	64	--	530	2,195
1979	1,849	418	67	--	485	2,334
1980	2,319	403	137	--	540	2,859
1981	2,997	247	112	--	359	3,356
1982 Prel.	2,776	300	65	--	365	3,141

1/Fiscal year has been changed from July-June to October-September. 2/ Includes local currency, convertible local currency, dollar credit, and private trade. 3/Includes government-to-government, world food, and voluntary relief. 4/Mutual Security Aid.

Source: Office of the General Sales Manager, USDA.

Table 14.--U.S. milled rice exports under Government programs, by country of destination

Country of destination	Fiscal year 1/				
	1978	1979	1980	1981	1982 2/
<u>1,000 metric tons</u>					
Guinea	23	8	12	18	16
Honduras	--	--	1	1	1
India	4	--	--	--	--
Indonesia	383	246	238	104	9
Cambodia	--	--	55	27	9
Liberia	--	--	7	29	47
Peru	--	71	54	46	57
Portugal	--	15	--	--	--
Syria	21	35	--	--	--
Tanzania	20	--	12	--	12
Relief of Dacca (Bangladesh)	20	2	--	--	55
Zaire	12	19	28	4	--
Other	47	89	133	130	159
Total 4/	530	485	540	359	365

1/ Fiscal year has been changed from July-June to October-September. 2/ Preliminary.

Source: Office of the General Sales Manager, USDA.

Table 15.--Thailand milled rice prices, f.o.b. Bangkok, by month 1/

Type and month	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
<u>Dollars per metric ton</u>						
100% 1st grade						
August	306	396	378	463	528	330
September	306	399	390	463	517	313
October	306	390	392	463	485	295
November	321	345	394	484	458	299
December	352	324	409	491	409	307
January	368	329	425	491	378	301
February	402	330	428	501	364	318
March	425	344	443	529	370	
April	440	346	447	540	356	
May	438	348	459	544	342	
June	432	352	463	560	334	
July	414	355	463	551	325	
Average	376	355	424	507	406	
100% 2nd grade						
August	290	381	363	450	508	300
September	290	384	375	450	497	283
October	291	375	377	450	465	266
November	307	330	382	471	438	269
December	338	309	394	478	389	277
January	352	314	410	478	352	270
February	388	315	413	488	332	280
March	410	329	428	514	340	
April	425	331	432	525	326	
May	423	333	444	529	312	
June	418	337	450	545	304	
July	399	340	450	533	295	
Average	361	340	410	493	380	
5% broken						
August	275	366	349	442	498	287
September	275	369	360	442	487	270
October	278	360	362	442	455	255
November	294	315	364	463	428	258
December	324	294	379	470	379	266
January	338	299	395	470	342	260
February	374	300	399	480	324	270
March	396	314	415	505	325	
April	411	316	419	515	311	
May	409	318	433	519	299	
June	404	324	442	535	291	
July	384	327	442	523	282	
Average	347	325	397	484	368	

1/ Includes export premium, export tax, and cost of bags. Packed in bags of 100 kgs. net.

Source: Rice Market News, Agricultural Marketing Service, USDA.

INDEX OF TABLES

RICE

	Page	Table number
<u>Supply and distribution--United States</u>		
<u>Rough equivalent:</u>		
Marketing years, 1979-82	2	1
Marketing years, 1979-81 August-December 1981-82	16	2
<u>Milled rice:</u>		
Marketing years, 1979-81 August-December 1981-82	16	3
 <u>Acreage, Yield and Production</u>		
<u>United States</u>		
By Type and State, 1981-83	17	4
 <u>Stocks</u>		
Rough and milled total in all positions, for selected dates, 1979-83	18	5
Price support activity by States, 1982 crop	18	6
 <u>Prices</u>		
Received by farmers, monthly, by States, and United States 1978-83	19	7
Milled rice, average price of head rice at selected milling centers, by months, 1979-83	20	8
Rice by-product prices at Southwest Louisiana, 1979-83	21	9
Arkansas brewers rice and New York brewers corn grits by months, 1979-83	21	10
Thailand prices f.o.b., Bangkok by months, 1977-83	25	15
 <u>World</u>		
Production and stocks, for selected countries or regions, 1978-82	22	11
Trade, by country or region, calendar years 1979-83	23	12
 <u>Exports</u>		
<u>United States:</u>		
By type of sale, 1978-82	24	13
Under Government programs, by country of destination, 1978-82	24	14



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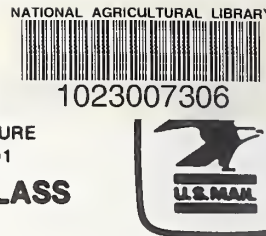
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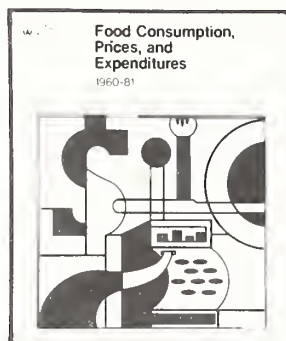
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